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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

THAI, LUAN C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,166

Applicant(s)

BADEHI, AVNER PIERRE

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-14,16-19,30-32,35 and 37-81 is/are pending in the application.
- 4a) Of the above claim(s) 41-54,56-59,70-72,75 and 77-80 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 38-40,60-69,73,74,76 and 81 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-14,16-19,30-32,35 and 37 is/are rejected.
- 7) ☒ Claim(s) 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Request for Continued Examination

A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/19/03 has been entered. An action on the RCE follows.

Election by Original Presentation

1. Newly submitted claims 41-54, 56-59, 70-72, 75, and 77-80 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

- I. The invention originally claimed (claims 1-4, 6-14, 16-19, 30-32, 35, 37-40 and new claims 55, 60-69, 73-74, 76, and 81) drawn to a semiconductor device, classified in class 257, subclass 729.
- II. Newly submitted claims 41-54, 56-59, 70-72, 75, and 77-80 drawn to a method of producing a crystalline substrate based device, classified in class 438, subclass 127.

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the device could be manufactured in a way

different than the method claims. The microstructure device can be attached to the packaging layer and then attached to the crystalline substrate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 41-54, 56-59, 70-72, 75, and 77-80 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation "*at least one chip scale package*", which is sealed over the microstructure, as recited in claims 10 and 37 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Objections

5. Claim 32 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 31. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims **10-14, 16-18 and 37** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification, as originally filed, does not disclose that "*at least one chip scale package*" is sealed over the microstructure, as recited in claims 10 and 37, and that package is at least partially transparent, as recited in claim 10.

Claims **11-14 and 16-18** are rejected since each includes the limitations of independent claims **10**.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims **10-14, 16-18 and 37** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims **10 and 37**, the recitation "*at least one chip scale package* which is sealed over the microstructure" is unclear and not understood by the Examiner. If "a

chip scale package" is sealed over the microstructure, how the microstructure can receives light through such chip scale package.

Claims **11-14 and 16-18** are rejected since each includes the limitations of independent claims **10**.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims **1-2, 4, 6-11, 13, 16-19 and 37**, insofar as in compliance with 35 USC § 112, are rejected under 35 U.S.C. 102(e) as being anticipated by Spaeth et al. (5,981,945 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims **1-2, 4, 7-11, 13, 17-19, and 37** Spaeth et al. disclose (specifically see figures 1-4) a chip packaged silicon crystalline substrate based device comprising: a silicon crystalline substrate (1) (Col. 3, lines 23+) having formed thereon an optoelectronic structure (6), a spacer (7) on the substrate (1) to define a cavity extending entirely therethrough, a transparent chip scale

packaging layer (8) sealing over the optoelectronic structure (6) by an adhesive layer (9) and defining therewith at least one gap between the silicon crystalline substrate (1) and the transparent layer (8), wherein the optoelectronic structure (6) receives light via the transparent layer (8).

Regarding claims 6 and 16, Spaeth et al. further disclose the at least one gap between the crystalline substrate 1 and the at least one transparent layer 8 (18) comprising a plurality of gaps (see figure 4).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3 and 12, insofar as in compliance with 35 USC § 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth et al. (5,981,945 of record) in view of Sogard (6,215,642 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 3 and 12, Spaeth et al. disclose(s) all the limitations of the claimed invention as detailed above except for the adhesive comprising epoxy. An adhesive comprising of epoxy, however, is conventionally used in semiconductor art for attaching a cover or a membrane to a silicon substrate, as

taught by Sogard (Col. 6, lines 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional adhesive comprising epoxy to bond the transparent layer 8 to the silicon substrate 1 in Spaeth et al.'s structure device, since such adhesive comprised epoxy is conventionally used in the art as being taught by Sogard.

14. Claims 14, 30 and 35, insofar as in compliance with 35 USC § 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth et al. (5,981,945 of record) in view of Eda et al. (5,925,973 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 14, 30 and 35, Spaeth et al. disclose(s) all the limitations of the claimed invention as detailed above except for specifying the crystalline substrate comprising lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart (as recited in claim 35). Lithium niobate, lithium tantalate and quart, however, are conventional materials in the art for making a crystalline substrate as being taught by Eda et al. (Col. 2, lines 35+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the crystalline substrate comprising either lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart (as recited in claim 35), since such materials are well known in the art for making a crystalline substrate as being taught by Eda et al.

15. The following reference(s) is/are cited as of interest to this application:

U.S. Pat. No. 6,111,274 to Arai is/are cited for showing a crystalline substrate may comprises of Si, quartz, GaAs, ZnSe, ZnS, Gap, and InP, for example (Col. 11, lines 47+).

Allowable Subject Matter

16. Claim 55 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

17. Claims 38-40, 60-69, 73-74, 76, and 81, are allowed.

18. The following is a statement of reasons for the indication of allowable subject matter:

The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitation of the substrate, microstructure and packaging layer form a chip scale package having a multiplicity of electrical contacts plated along edge surfaces thereof, as recited in de pendent claim 55 and independent claims 38, 60 and 65; especially when these limitations are considered within the specific combination claimed.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

Application/Control Number: 09/725,166
Art Unit: 2827

Page 9

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Luan Thai', with a long horizontal flourish extending to the right.

Luan Thai
June 14, 2003